



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/562,440

12/28/2005

Fumio Kato

043888-0427

3638

20277 7590 12/24/2009
MCDERMOTT WILL & EMERY LLP
600 13TH STREET, N.W.
WASHINGTON, DC 20005-3096

EXAMINER

BUCHANAN, JACOB

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

12/24/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/562,440	Applicant(s) KATO ET AL.	
	Examiner Jacob Buchanan	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/8/2009, 11/23/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements (IDS) submitted on 10/8/2009 and 11/23/2009 were filed after the mailing date of the first Office action on 7/9/2009. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christian (WO 03/076339) in view of Noya et al. (US Patent 6,566,009).

Regarding claims 1 and 2, Christian discloses an alkaline battery (10) comprising:

- a positive electrode (12), a negative electrode (14) and an alkaline electrolyte (P8/L4-5 L9, see Figure 1),
- said positive electrode (12) comprising a positive electrode material mixture containing nickel oxyhydroxide (P1/L26-30) and a graphite conductive material (P10/L6-7 & P10/L22-31),
- wherein said nickel oxyhydroxide comprises a crystal having a beta type structure (P6/L6-8), said crystal having manganese dissolved therein (P3/L6-9), and

- the amount of said manganese contained in said nickel oxyhydroxide is 0.5 to 10 mol% relative to the total amount of nickel and said manganese contained in said nickel oxyhydroxide (P3/L8-9).

To clarify, Christian discloses that a nickel oxyhydroxide can be prepared by combining a nickel hydroxide and a hydroxide salt in an inert atmosphere to form a mixture (P4/L4-5). Christian further discloses that nickel hydroxide can include at least one bulk dopant including aluminum, manganese, cobalt, zinc, gallium, indium, or bismuth. It is noted that when a material, in this case nickel oxyhydroxide, is made by combining another material, in this case nickel hydroxide, which is doped with a substance, in this case manganese, the resulting material will contain the doped substance.

While Christian discloses an alkaline battery (10) comprising a beta type nickel oxyhydroxide, the reference does not explicitly disclose a battery also comprising electrolytic manganese dioxide. The reference does however disclose that generally alkaline batteries have a cathode, an anode, a separator and an alkaline electrolyte solution and that the cathode can include a cathode material including manganese dioxide or nickel oxyhydroxide (P1/L5-8).

Noya discloses an alkaline battery (C1/L41-50, see Figure 1), comprising a positive electrode containing manganese dioxide and nickel oxyhydroxide as an active material (C1/L41-50). Noya further discloses that when a positive electrode contains 20 to 90% by weight of manganese dioxide and 80 to 10% weight of nickel oxyhydroxide,

Art Unit: 1795

the alkaline battery has excellent discharge characteristics at the initial stage and after storage at high temperatures (C2/L56-60).

Christian and Noya are combinable because they are both concerned with the same field of endeavor, the making of an alkaline battery comprising nickel oxyhydroxide.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the manganese dioxide in the electrode of the alkaline battery, as taught by Noya, with the nickel oxyhydroxide in the electrode of the alkaline battery as taught by Christian, for the purpose of having a battery with excellent discharge characteristics at the initial stage and after storage at a high temperature.

Christian further discloses the battery (10) comprising an alkaline electrolyte (P1/L5-6) wherein the electrolyte can be an aqueous solution of alkali hydroxide, such as potassium hydroxide, sodium hydroxide, lithium hydroxide, or mixtures thereof (C8/L22-23). The electrolyte, as further disclosed, can contain between 15 wt% and 60 wt%, between 20 wt% and 55 wt%, or between 30 wt% and 50 wt% alkali hydroxide dissolved in water (P8/L23-25). In an example, beta nickel hydroxide and natural graphite and an aqueous electrolyte solution containing 38 wt% KOH and 2 wt% ZnO with a mortar and pestle (P15/L24-27). Although Christian discloses in a particular example a 38 wt% KOH aqueous solution (as opposed to the 40 wt% required by the claim) the claimed amount would have been obvious to one of ordinary skill in the art through routine experimentations in an effort to optimize discharge characteristics and electrolytic activity taking into consideration the relative amounts of the active materials,

Art Unit: 1795

manganese dioxide and beta nickel oxyhydroxide, the amount of conductive material, and the size of the battery.

Regarding the claim limitations recited in claim 2, which are directed to specific properties of the electrode comprising nickel oxyhydroxide and conductive graphite ("a constant current per gram of said nickel oxyhydroxide of 5 mA is applied to said molded article, the potential of said molded article has a first plateau region ranging from +500 to +100 mV relative to an Hg/HgO electrode and a second plateau region ranging from +100 to -400 mV relative to said Hg/HgO electrode; the discharge capacity per gram of said nickel oxyhydroxide in said first plateau region is 220 to 250 mAh, and; the discharge capacity per gram of said nickel oxyhydroxide in said second plateau region is 10 to 25 mAh"), it is noted that once nickel oxyhydroxide and conductive graphite are mixed with an aqueous electrolyte solution containing 38 wt% KOH (see Christian, P15/L24-27), and therefore is substantially the same as the mixture of nickel oxyhydroxide, conductive graphite, and 40 wt% KOH, it will, inherently, display recited properties absent any evidence to the contrary. See MPEP 2112.

Regarding claims 3 and 4, modified Christian discloses all of the claim limitations as set forth above. Noya further discloses the alkaline battery wherein the amount of said nickel oxyhydroxide is 10 to 80 wt% relative to the total amount of said nickel oxyhydroxide and said electrolytic manganese dioxide contained in said positive electrode material mixture, and the amount of said electrolytic manganese dioxide is 20 to 90 wt% relative to said total amount (C2/L56-60). Noya further discloses data results

Art Unit: 1795

of using the alkaline battery with nickel oxyhydroxide and manganese dioxide within these ranges such as 90 wt% manganese dioxide and 10 wt% nickel oxyhydroxide in battery number 3 or 20 wt% manganese dioxide and 80 wt% nickel oxyhydroxide in battery number 6 (see Table 6, C7/L25-41).

Regarding claims 5 and 6, modified Christian discloses all of the claim limitations as set forth above. Christian discloses the battery wherein the electrode can include, for example, between 2 wt% and 35 wt%, between 3 wt% and 10 wt%, or between 4 wt% and 8 wt% of conductive carbon particles or a blend of conductive carbon particles (P10/C28-31). Noya discloses the battery wherein the manganese dioxide, nickel oxyhydroxide, and graphite were mixed at the weight ratio of 50 to 50 to 5 (C3/L33-35).

Regarding claims 7 and 8, modified Christian discloses all of the claim limitations as set forth above. Noya discloses the battery wherein said positive electrode material mixture further contains at least one rare earth metal oxide selected from the group consisting of Y_2O_3 , Er_2O_3 , Tm_2O_3 , Yb_2O_3 , and Lu_2O_3 (C1/L41-50), and the amount of said rare earth metal oxide is 0.1 to 2 wt% relative to the total amount of said nickel oxyhydroxide, said electrolytic manganese dioxide, said graphite conductive material and said rare earth metal oxide (C2/L48-55 & C6/L11-25, see Table 4).

To clarify, Noya discloses the battery comprising at least one compound selected from the group consisting of an oxygen-containing zinc compound, an oxygen-containing, calcium compound, an oxygen-containing yttrium compound, and an oxygen-containing titanium compound (C1/L41-50). An oxygen-containing compound from this group added to the positive electrode mixture raises the oxygen overpotential

Art Unit: 1795

for the oxygen-generating reaction (C2/L26-33). Noya continues to disclose the oxygen-containing compound contained in the positive electrode is 0.1 to 10% by mole of nickel oxyhydroxide, and especially when the content of oxygen-containing compound is 0.1 to 5% by mole of the nickel oxyhydroxide, discharge characteristics at the initial stage is improved (C2/L48-55). Noya further discloses data results using the alkaline battery with amounts of yttrium oxide within these ranges such as 0.1, 1.0, and 5.0 mole% of yttrium oxide (C6/L11-25, see Table 4).

Response to Arguments

4. Applicant's arguments filed on 10/9/2009 have been fully considered but they are not persuasive.

Applicant argues that the instant specification provides clear evidence of the unexpected improvement in discharge capacity and discharge time as compared to other battery configurations, and therefore person of ordinary skill in the art would not have found it obvious to modify the battery of Christian by adding manganese dioxide as taught by Noya

Applicant alleges unexpected results based on evidence presented in specification, batteries C1, D2, E2, F2 and Tables 1-3. The question as to whether unexpected advantage has been demonstrated is a factual question. *In re Johnson*, 747 F.2d 1456, 1460, 223 USPQ 1260, 1263 (Fed. Cir. 1984). Thus, it is incumbent upon applicant to supply the factual basis to rebut the prima facie case of obviousness established by examiner. See, e.g., *In re Klosak*, 455 F.2d 1077, 1080, 173 USPQ 14,

Art Unit: 1795

16 (CCPA 1972). Applicants, however, do not provide an adequate explanation regarding any factual showing in the specification of unexpected results as the examples C1, D2, E2, and F2 have not been shown to be commensurate in scope with rejected claims. For example, the rejected claims are limited to 0.5-10 mol% relative to the total amount of nickel and said manganese contained in said nickel oxyhydroxide, but the recited examples only disclose the presence of manganese in concentrations of 0, 3, 6, and 9 mol%, and have not specifically disclosed the lower and upper bounds of the claimed concentration. Nor have the applicants shown that comparison samples in said examples fairly represent the closest prior art. The examiner would like to point out that cited part of the instant specification does not compare the concentration of manganese in the NiOOH with the amount of manganese dioxide in the electrode in the specified examples, and therefore not disclosing that the combination of Mn in the NiOOH structure and MnO₂ in the electrode provides an unexpected improvement over the prior art. Additionally, as few examples were provided, the cause of improvement cannot be determined. Moreover, given the prior art teachings, the applicants have not met the burden of establishing that the reported results would have been truly unexpected to a person of ordinary skill in the art on this record or otherwise established the unobviousness of the claimed composition. *In re Klosak*, 455 F.2d 1077, 1080, 173 USPQ 14, 16 (CCPA 1972).

5. In response to applicant's argument that the combination of NiOOH and manganese dioxide achieves unexpectedly high characteristics in low load and high load discharges, the fact that applicant has recognized another advantage which would

Art Unit: 1795

flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Furthermore, Noya teaches that when an alkaline battery comprises manganese dioxide and NiOOH in the positive electrode, said battery will have excellent discharge characteristics at the initial stage and after storage at high temperatures (**C2/L55-60, Table 6**). Therefore, a person of ordinary skill in the art would have found it obvious to add manganese dioxide to an electrode comprising NiOOH to create a battery having excellent discharge characteristics at the initial stage and after storage is desirable.

Applicant argues Christian is silent to why the bulk dopant is added to NiOOH and the difference in discharge characteristics resulting from the difference between beta and gamma structure NiOOH, fails to suggest selecting a beta type NiOOH in which 0.5-10 mol% of manganese is dissolved to maintain the conductivity of the NiOOH in the second plateau region.

Christian discloses a number of embodiments including NiOOH with beta and gamma structures and containing a bulk dopant including manganese. Therefore, Christian anticipates and discloses the recited claim limitations. Furthermore, as the number of embodiments disclosed by Christian is not large enough to detract from the concepts of the invention, the argument is not considered persuasive.

6. In response to applicant's argument that manganese is dissolved (in the NiOOH) to maintain the conductivity of the NiOOH in the second plateau region, a recitation of

Art Unit: 1795

the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

7. Applicant argues that inherency is inapplicable to a combination of references.

The applicant further states that:

“the battery configuration recited in claim 2 would not be "inherent" over Christian in view of Noya. Moreover, even if “nickel oxyhydroxide” of the present invention is inherent from “nickel oxyhydroxide” of Christian, an “alkaline battery” obtained by combining Christian with Noya would not be inherent.”

In the previous Office action, the examiner stated:

“Regarding the claim limitations recited in claim 2, which are directed to *specific properties* of the electrode comprising nickel oxyhydroxide and conductive graphite (“a constant current per gram of said nickel oxyhydroxide of 5 mA is applied to said molded article, the potential of said molded article has a first plateau region ranging from +500 to +100 mV relative to an Hg/HgO electrode and a second plateau region ranging from +100 to -400 mV relative to said Hg/HgO electrode; the discharge capacity per gram of said nickel oxyhydroxide in said first plateau region is 220 to 250 mAh, and; the discharge capacity per gram of said nickel oxyhydroxide in said second plateau region is 10 to 25 mAh”), *it is noted that once nickel oxyhydroxide and conductive graphite are mixed with an aqueous electrolyte solution containing 38 wt% KOH (see Christian, P15/L24-27), and therefore is substantially the same as the mixture of nickel oxyhydroxide, conductive graphite, and 40 wt% KOH, it will, inherently, display recited properties absent any evidence to the contrary. See MPEP 2112.*”

Art Unit: 1795

Specifically, the examiner stated that the specific properties of the electrode (mixture of said NiOOH, graphite conductive material, and aqueous solution containing 40 wt% KOH) are inherent; not an “alkaline battery” as suggested by the applicant. Because the compositions of the instant invention and the composition the prior art of record discloses are physically the same, they must have the same properties, and therefore the specific properties are inherent to the composition. A chemical composition and its properties are inseparable. See MPEP 2112.01. Furthermore, the primary reference, Christian discloses the component mixture of NiOOH, graphite conductive carbon, and 40 wt% KOH and is not taught in whole or in part by the teaching reference, Noya, and therefore the disclosed limitation is not taught by a combination of references.

Moreover, once a recited composition is disclosed by prior art (either by one reference or a combination of reference, the composition will, inherently, display the recited properties. Therefore, the argument that inherency is inapplicable to a combination of references is not persuasive.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

Art Unit: 1795

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Buchanan whose telephone number is (571)270-1186. The examiner can normally be reached on Monday - Friday 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on (571)272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. B./

Examiner, Art Unit 1795

/Basia Ridley/

Supervisory Patent Examiner, Art Unit 1795